

Amendments to the Claims:

This listing of Claims will replace all prior versions, and listings, of Claims in the application.

Listing of Claims

1. (Currently Amended) A method for converting source color points in source image data from a source color space to a target color space, said source color space defined by a combination of N source primary color points, wherein N is an integer, the method comprising:

for the target color space, defining a set of at least N+1 target primaries in which to render said source color points as a combination of said target primaries; said at least N+1 target primaries forming the boundary of the target color space;

defining an interior color point positioned in the interior of the boundary of said target color space;

dividing said target color space into a set of non-overlapping regions that are bounded by at least two of the at least N+1 target primaries and by said interior color point;

calculating a solution matrix for each said region, said solution matrix comprising a set of coefficients stored in a coefficient storage;

for a given source color point in said source color space, selecting one of said solution matrices for rendering said source color point in said target color space, said step of selecting further comprising:

determining the hue angle of said source color point; and
using said hue angle to select said set of coefficients comprising the solution matrix for the region in which said source color point resides;

loading said set of coefficients into a multiplier; and

computing an output color point using said source color point and said set of coefficients loaded into said multiplier~~selected solution matrix.~~

2. (Original) The method of Claim 1 wherein N is 3.
3. (Original) The method of Claim 1 wherein said interior color point is the white point of the target color space.
4. (Original) The method of Claim 1 wherein said interior color point is an off-white color point of the target color space.
5. (Original) The method of Claim 1 wherein said regions are substantially triangles.
6. (Previously Presented) The method of Claim 1 wherein the step of calculating a solution matrix further comprises calculating a matrix that converts between an intermediate color space and the target color space for each said region bounded by said at least two primaries and by said interior color point.
7. (Original) The method of Claim 6 wherein the intermediate color space is CIE XYZ space.
8. (Original) The method of Claim 6 wherein the intermediate color space is the source color space.
- 9 – 10 (Canceled).
11. (Currently Amended) An image processing system for converting source color points in source image data from a source color space to a target color space, said source color space defined by a combination of N primary color points, wherein N is an integer, said image processing system comprising:
 - a display panel configured to display image data in said target color space; said target color space being defined by a set of at least N+1 target primary color points forming a boundary of said target color space; and
 - processing circuitry configured to define an interior color point positioned in the interior of the boundary of said target color space, to divide said target color space

into a set of non-overlapping regions that are bounded by at least two of said N+1 target primary color points and by said interior color point, to calculate a set of coefficients to a solution matrix for each said region, and to select one of said set of coefficients to said solution matrices for rendering a source color point on said display panel defined by said target primary color points; and

a multiplier to calculate an output value based upon said source color point and said set of coefficients selected.

12. (Original) The image processing system of Claim 11 wherein N is 3.

13. (Original) The image processing system of Claim 11 wherein said interior color point is the white point of the target color space.

14. (Original) The image processing system of Claim 11 wherein said interior color point is an off-white color point of the target color space.

15. (Previously Presented) The image processing system of Claim 11 wherein said regions are substantially triangles.

16. (Previously Presented) The image processing system of Claim 11 wherein the processing circuitry is further configured to choose a matrix to convert between an intermediate color space and said region bounded by said at least two primaries and said interior color point.

17. (Original) The image processing system of Claim 16 wherein the intermediate color space is CIE XYZ space.

18. (Original) The image processing system of Claim 16 wherein the intermediate color space is the source color space.

19. (Previously Presented) The image processing system of Claim 11 wherein the processing circuitry is further configured to determine in which region said source color point resides.

20. (Previously Presented) The image processing system of Claim 19 wherein the processing circuitry is further configured to determine the hue angle of said source color point and to determine from said hue angle in which region said source color point resides.

21. (Currently Amended) A system for converting source image data color points from a source color space to a target color space, wherein said source color space is defined by N source primary color points and said target color space is defined by at least N+1 target primary color points, said system comprising:

input means for accepting source image data color points;

a hue angle calculator configured for calculating hue angles for the source image data color points;

a gamut converter configured for optionally fitting the gamut of the source color space to the gamut of said target color space using the calculated hue angles; and

a multi-primary converter configured for converting said source image data color points from the N-primary source color space into image data values for rendering in the at least N+1 primary target color space using one of a plurality of conversion matrices; wherein the multi-primary converter is further configured to select said conversion matrix using the calculated hue angles, wherein said converter further comprises storage for storing associated coefficients for said conversion matrices and a multiplier for calculating an output value based upon said source image data and said associated coefficients of said conversion matrix selected.

Claims 22 – 29: (Canceled).

30. (Previously Presented) The system of claim 21 wherein the multi-primary converter comprises a multiplier configured for multiplying a source image data color point by said conversion matrix to produce an image data value in the at least N+1 primary target color space.

31. (Previously Presented) The system of claim 21 wherein each conversion matrix converts a source image data color point from said source color space comprising N primary color points to an image data value positioned in a region in the at least N+1 primary target color space, said region being bounded by at least two of the at least N+1 primary color points of said target color space; said region being identified by one of said calculated hue angles.

32. (Currently Amended) An image processing system for converting an input N-valued color image data value in a source color space to an at least N+1-valued color image data value in a target color space, said source color space being defined by N primary color points and said target color space being defined by at least N+1 primary color points in said target color space, wherein N is an integer, said image processing system comprising:

a display for displaying image data in said target color space defined by said at least N+1 primary color points; and

processing circuitry configured for accepting said input N-valued color image data value, and configured for producing said at least N+1-valued color image data value in said target color space for rendering on said display; said processing circuitry being further configured for calculating a hue angle for said input N-valued color image data value; said processing circuitry being further configured for selecting a set of coefficients associated with one of a plurality of solution matrices ~~conversion data~~ using said hue angle; said processing circuitry being further configured for using said set of coefficients ~~selected conversion data~~ and said source image data in a multiplier to produce said at least N+1-valued color image data value in said target color space.

33. (Canceled).